4 INVESTIGATION OBSERVATIONS AND RESULTS

This Section summarizes the nature and extent of MGP residuals in soil, groundwater, soil vapor, sediment, and surface water within the areas of concern identified across the North Station OU. Nature and extent presented in this section is based on a combination of field observations made during field investigation/sample collection as well as comparison of laboratory analytical results against applicable screening criteria. As presented in the RAF (Exponent, 2007) and the RAF Addendum Revision 3 (Exponent, 2014), the Multi-Site SLs have been developed through a hierarchical, tiered approach. This approach combined the USEPA Regional Screening Levels (RSL), federal Maximum Contaminant Levels (MCL), and State of Illinois TACO values, among others, for individual chemicals based on a cancer risk of $1x10^{-6}$ or hazard quotient of one. These hierarchical SLs are presented in Table 1A for soil, Table 2A for groundwater, Table 3 for soil gas and Table 5A for surface water. Table 1C presents City of Chicago background soil concentrations from Illinois TACO. Review of the June 2015 USEPA RSLs indicates updates to the SLs presented in the July 2014 RAF Addendum Revision 3 are necessary. However, those updates could not be incorporated into this document in time for submittal. Those updates will be incorporated into future revisions of this document, if needed.

Additional evaluation of chemicals of concern based on the cumulative risks, CSM, and contaminant fate and transport is included in Section 5 and the Baseline Risk Assessment (BLRA) in Appendix P. As previously stated, the NOS (i.e., **No**rth **S**tation) prefix in the tables indicates sample numbers and locations performed as part of the upland RI activities. For clarity, the NOS prefix is omitted from the discussion of sample numbers referenced below.

4.1 Areas East of Former MGP Operations

RI activities included investigation of several properties to the east of Crosby Street on the Old Town Village West parcel.

4.1.1 Old Town Village West - Former Tar Vat Area

RI activities included investigation of the property east of Crosby Street on the Old Town Village West parcel where a former building housed a tar vat during the period that it was owned by PGL. Two soil borings (SB104 and SB105) were performed adjacent to existing Building Group 6 townhomes.
Two sub-slab probes (SG17, SG18) were installed in the units located over the area of the former tar vat.

None of the soil samples from borings or soil gas probes exhibited visual/olfactory/PID evidence of MGP residuals. The analysis of six soil samples from these borings and probes indicated the following:

- There were no detections of VOCs.
- Residential or industrial soil SLs were exceeded in all samples for the PAHs benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene and indeno(1,2,3-cd)pyrene.
- No residential soil SLs were exceeded for total cyanide or PCBs.
- The industrial soil SLs were exceeded in all samples for arsenic. Shallower soil samples collected within 3.5 feet bgs also exceeded the residential soil SL for manganese. Two borings, SB105 (3-3.5' bgs) and SG18 (4-4.5' bgs) exhibited lead concentrations above residential and industrial soil SLs, respectively. Except for iron, all other metals were below residential soil SLs.

Soil gas samples collected in July 2013 and April 2014 from probes SG17 and SG18 below the slabs of two buildings exhibited no results above the residential SL except for naphthalene and chloroform (Figure 19). Naphthalene was found above the residential SL of 0.83 micrograms per cubic meter (µg/m^3) at 1.3 µg/m^3 in SG18 during the July 2013 sampling event only. Analysis of soil gas samples collected in September 2014 from probes SG17 and SG18 exhibited no results above residential SLs.

No site records have shown that chloroform was used at the former MGP facility. However, historic documentation for the area surrounding the former MGP indicates that other businesses with the potential for using/storing chlorinated solvents have been located in the area (North Station Former MGP Site-Specific Work Plan, NRT, 2011). For example, the former Spanjer Bros. property (4.4 acre triangular area bordered by Division, Crosby, Hobbie, and Howe Streets, to the east of the ComEd parcel) was previously occupied by various businesses, including lumber yard, automobile maintenance/repair garages, junkyard, metal and die cutting shop, sign factory and various manufacturing facilities and factories.

Also, soil gas probe locations are positioned throughout the upland OU and many are near water mains or beneath structures with municipal water connections (as shown on a combination of Figures 5 and 11 of the RI report). Trihalomethanes are a common disinfection byproduct in water supplies that use chlorine for disinfection (such as the City of Chicago water supply) (Viessman et.al. 2009). It is plausible that the detections of chloroform in soil gas samples originated from businesses operated near the site or are the result of a leaking water supply line, as discussed further in Section 4.1.1.

4.1.2 Old Town Village West – Former UST Area

A construction log for a monitoring well previously installed at the intersection of Crosby and Elm Streets (MW4/NS006, Barr 2001) noted light non-aqueous phase liquid (LNAPL) (described as "black sand and gravel with heavy free-phase product") at the water table (about 6 feet bgs) directly over the silty clay unit. Four underground storage tanks (UST), not related to the MGP operations, were formerly located immediately adjacent to this well (SSWP Revision 1 [NRT 2012]). A new water table well (MWW104) was installed at the former location of MW4/NS006.

Consistent with past observations at this location, a "strong petroleum-type odor" and elevated PID response (26 to 140 parts per million [ppm]) were noted in saturated soil at the fill/silty clay interface. The analysis of three soil samples collected during the well installation indicated the following:

- There were no detections of PVOCs above residential soil SLs.
- Residential or industrial soil SLs were exceeded in the two shallow samples collected in the fill between 0.7 to 6.9 feet bgs for PAHs benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenz(a,h)anthracene and/or indeno(1,2,3-cd)pyrene. The Chicago background values were also exceeded for these compounds.
- The deeper soil sample collected at 10 to 11 feet bgs in silty clay showed no PAH SL exceedances and PAHs were typically not detected.
- PCBs were not detected.
- The industrial soil SL for arsenic was exceeded in all samples and the Chicago background level was exceeded in MWW104 (0.7-1.6' bgs). Lead concentrations were below residential soil SLs.

The analysis of groundwater samples collected from MWW104 in April and August 2014 indicated the following:

- There were no detections of PVOCs or phenol.
- PAHs were below groundwater SLs.
- Metals were below groundwater SLs.

One boring (SB106) was performed approximately 100 feet further east of MWW104 to confirm the lateral extent of the hydrocarbon observations. The boring log indicated no visual/olfactory evidence or PID response suggesting the presence of hydrocarbon residuals. Two soil samples collected within the fill showed no exceedances of residential soil SLs for PVOCs, PCBs, and lead. Similar to MWW104, there were exceedances of SLs for several non-naphthalene PAHs and arsenic.